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Date.	Mag.
1888, Jan. 20	8·7
„ „ 31	8·8
„ Feb. 7	8·8
„ „ 16	9·0
„ „ 21	9·0
„ Mar. 3	9·1
„ „ 8	9·1
„ „ 14	9·2
„ „ 19	9·2
„ „ 28	9·1
„ April 12	9·0
„ „ 18	9·0
„ „ 27	9·0
„ May 4	8·9
„ „ 13	8·7
„ „ 19	8·6
„ June 8	8·0
„ „ 12	8·0
„ „ 24	7·9
„ July 5	7·1
1888, Dec. 5	8·6
„ „ 23	9·0
1889, Jan. 5	9·1
„ „ 22	9·2
„ „ 28	9·0
„ Feb. 21	9·0
„ Mar. 4	8·8
„ „ 21	8·5
„ April 1	8·4
„ „ 30	7·8
„ June 3	5·2
„ „ 7	5·0
„ „ 13	4·9
„ „ 17	4·9
„ „ 21	4·7
„ „ 24	4·7
„ „ 29	4·9
„ July 4	5·0
„ „ 7	5·0
„ „ 14	5·0
1889, July 22	5·7
„ Dec. 13	9·2
„ „ 25	9·2
1890, Jan. 8	9·2
„ „ 22	8·7
„ Feb. 26	8·5
„ Mar. 15	8·1
„ April 7	5·8
„ „ 11	5·3
„ „ 18	5·3
„ „ 23	5·5
„ „ 26	5·5
„ May 7	5·6
„ „ 8	5·7
„ „ 13	5·8
„ „ 19	5·9
„ „ 23	6·1
„ June 11	6·6
„ „ 20	6·8

Windsor, N.S. Wales :
September 25, 1890.

Observations of the Solar Eclipse of 1890 *June* 16–17, *made at the Royal Observatory, Greenwich.*

(*Communicated by the Astronomer Royal.*)

The observations of this eclipse with the south-east equatoreal were directed to the determination of the corrections to the Moon's R.A. and N.P.D. and to the semi-diameters of the Sun and Moon. The circumstances of this eclipse were, however, not favourable for determination of corrections to the semi-diameters.

Owing to the cloudy weather it was only possible to make a few observations on the morning of June 17; and though an extended programme of five groups of observations had been drawn up, two groups only were represented in the results, and the corrections to the Moon's R.A. and N.P.D. could not be obtained independently of the corrections to semi-diameters. The following measures were made by Mr. Turner, the declination microscopes being read by Mr. Downing :—

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Putting :—

$d\alpha$ = correction to Moon's R.A.
$d\delta$ = correction to Moon's N.P.D.
ds = correction to Moon's Semidiameter.
dA = correction to Sun's R.A.
$d\Delta$ = correction to Sun's N.P.D.
dS = correction to Sun's Semidiameter.

(1) From $21^{h}\ 47^{m}$ to $22^{h}\ 5^{m}$ G.M.T., 6 differences of N.P.D. of *p* and *f* cusps were observed, giving

$$-\tfrac{1}{4}d\alpha - d\delta + dS + ds.$$

(2) From $22^{h}\ 10^{m}$ to $22^{h}\ 16^{m}$ G.M.T., 4 differences of R.A. of *p* and *f* cusps were observed giving

$$-d\alpha + dS + ds.$$

Two resulting equations were found by taking the sums of the constituent equations in each group, obtained by a comparison of the measured with the tabular quantity as affected by the symbolical corrections $d\alpha - dA$, $d\delta - d\Delta$, ds and dS :—

$$\begin{array}{lllll} -20''\cdot49 = & -1\cdot294\,(d\alpha - dA) & -5\cdot970\,(d\delta - d\Delta) & +6\cdot822\,ds & +6\cdot975\,dS \\ -13''\cdot69 = & -4\cdot046 & -0\cdot086 & +4\cdot452 & +4\cdot397 \end{array}$$

The solution of which is :—

$$d\alpha - dA = +3''\cdot326 + 1\cdot081\,ds + 1\cdot067\,dS$$
$$d\delta - d\Delta = +2''\cdot711 + 0\cdot908\,ds + 0\cdot937\,dS.$$

From observations of the Sun made with the transit-circle on 16 days between May 24 and June 28 :—

$$dA = +0''\cdot511 \qquad d\Delta = +0''\cdot177$$

Combining this result with that obtained from the equatorial observations during the eclipse, we obtain for the corrections to the tabular place of the Moon in R.A. and N.P.D. :—

$$d\alpha = +3''\cdot837 + 1\cdot081\,ds + 1\cdot067\,dS$$
$$d\delta = +2''\cdot888 + 0\cdot908\,ds + 0\cdot937\,dS.$$

From 5 transits of the Sun's diameter and 5 measures of the diameter in N.P.D., made on the morning of June 18, with the same instrument and by the same observers, the apparent corrections to the tabular semidiameter were found to be :—

$$\text{in R.A. } dS = -0^{s}\cdot03 = -0''\cdot41$$
$$\text{in N.P.D. } dS \quad = +0''\cdot11.$$

from which it would appear that dS is a very small quantity.

The telescope of the South-East Equatoreal has an aperture of 12·8 inches, and a magnifying power of 295 was used.

Royal Observatory, Greenwich :
1890 *November* 13.

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